Emergency Management Program Follow-up Review at the Albuquerque Operations Office

Transportation Safeguards Division

December 1999

Office of Independent Oversight and Performance Assurance

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Abbreviations Used in This Report

AL	Department of Energy Albuquerque Operations Office
CBT	Computer-based Training
CCIC	Convoy Commander-in-Charge
DOE	U.S. Department of Energy
EAL	Emergency Action Level
EOC	Emergency Operations Center
OA	Office of Independent Oversight and Performance Assurance
SECOM	Secure Communications
TSD	Transportation Safeguards Division

OVERSIGHT

Executive Summary

EVALUATION:	Independent Oversight Follow-up Review of the Emergency Management Program of the Albuquerque Operations Office Transportation Safeguards Division
SITE:	Albuquerque, New Mexico
DATE:	November 1999

Scope

The U.S. Department of Energy (DOE) Office of Emergency Management Oversight, within the Office of Independent Oversight and Performance Assurance (OA), conducted a follow-up review of the Albuquerque Operations Office (AL) Transportation Safeguards Division (TSD) emergency management program in November 1999. The TSD program was previously evaluated in May 1998 during a complex-wide review of DOE emergency management programs. The purpose of this follow-up review was to determine the status of corrective actions taken to address those program elements that were identified in 1998 as needing significant management attention. As part of this review, the evaluation team observed an emergency drill that required a response by the Secure Communications (SECOM) center and activation of the TSD situation room in Albuquerque.

Background

TSD is one of several sites and activities that were evaluated in 1998 as part of a Secretary of Energy directive to perform an independent review of the status of emergency management programs within the DOE complex. That evaluation identified positive attributes of the TSD program in the areas of facilities and equipment in the field and at SECOM in Albuquerque, convoy commander knowledge and understanding of incident command functions, public affairs training, and the process for maintaining agreements with offsite agencies. However, the 1998 evaluation also found that emergency management program elements were fragmented, fundamental program documents were outdated and incomplete, and the program was not based upon a solid technical foundation that reflected TSD hazards. More importantly, TSD management had not embraced DOE principles and requirements necessary to establish an emergency management program for operations involving hazardous materials, nor did they understand the importance of the need for program rigor as demonstrated, for example, by their failure to use established emergency action levels to categorize or classify an emergency. The evaluation concluded that strong management attention was needed to attain a comprehensive emergency management program at TSD.

Results

TSD has made important progress in improving its capability to respond to an emergency involving the potential or actual release of hazardous materials. Emergency plans and hazards assessments for both ground and air transportation of hazardous materials have been revised and updated, protective action recommendation decision diagrams have been revised, and computer-based training modules have been developed and tailored to TSD operations. Many excellent resources and decision-making tools are available to the individuals who staff the TSD emergency response facilities in Albuquerque, and responders used these assets effectively during the emergency drill. TSD managers and staff have also made a concerted effort to address the weaknesses identified during the 1998 evaluation, complete associated corrective actions, and independently verify that needed actions have been implemented.

Despite these efforts, some of the weaknesses that were identified in 1998 still exist, and TSD emergency management program documents still contain several important deficiencies. The failure to address and correct some of the weaknesses

previously identified is due, in part, to deficiencies in the AL and TSD assessment and corrective action management programs. AL and TSD managers did not ensure that the field report for the 1998 evaluation was captured in a corrective action tracking system to ensure that all of the weaknesses were addressed. They also did not assign responsibility for developing and completing corrective actions to specific individuals who could then be held accountable for their completion. As a result, key AL and TSD personnel with emergency management program responsibilities were not aware of the field report's existence and relied upon the much less detailed list of TSD weaknesses contained in the DOE complex-wide evaluation report. Nevertheless, a broader self-evaluation of the TSD program documents, implementing procedures, and decision-making resources should have identified and corrected these weaknesses.

In revising the ground transportation hazards assessment and subjecting it to an independent review, TSD established an appropriate foundation for emergency response planning for the primary hazardous material associated with these operations. Revisions to the ground transportation emergency plan resulted in categorization and classification thresholds that are appropriate for a hazardous material incident that does not occur on DOE property. However, these documents do not adequately address hazardous material incidents associated with TSD operations that might occur on a DOE site and do not include adequate consideration and evaluation of other types of hazardous materials that are routinely transported by TSD. Similar deficiencies are evident in the air transportation emergency plan and hazards assessments. Other weaknesses in these documents include inappropriate emergency action levels for Ross Aviation hazards and activities, failure to analyze a release scenario identified as high consequence, and a lack of integration between protective action recommendations for air transportation incidents and the resources used by the TSD crisis manager in an emergency.

Program and performance weaknesses were also identified in the areas of notifications to offsite responders, mechanisms for communicating essential emergency information among TSD responders, and responder understanding of predetermined protective action recommendations. For example, TSD has not established an adequate mechanism for formally notifying offsite authorities of a TSD emergency and conveying critical response information, such as protective action recommendations, in a timely manner. TSD's reliance on communicating this information at the scene of the incident does not satisfy the requirements of DOE Order 151.1, *Comprehensive Emergency Management System*. Similarly, TSD does not have a consistent or standard format for transmitting information from SECOM to the AL Operations Center, which is responsible for notifying DOE Headquarters of a TSD emergency, or for communicating such information between SECOM and the crisis manager upon his arrival to SECOM. Due in part to these weaknesses, the initial notification to DOE Headquarters during the observed emergency drill was not accompanied by any protective action recommendation and offsite authorities were not notified of such recommendations in a timely manner. The drill also demonstrated that neither the SECOM operator nor the TSD field incident commander understood the importance of the protective action recommendation card and its relevance to public safety.

Additional concerns were noted by the evaluation team with regard to the training, drill, and exercise program, emergency response procedures, and protective action decision-making diagrams. TSD has not established an integrated training plan to ensure that all emergency responders are adequately prepared to fulfill their assigned duties. TSD also does not routinely practice critical response functions, such as actually providing protective action recommendations to local responders and offsite authorities, or verify the adequacy of response functions provided by the AL emergency operations center during an emergency, such as offsite notifications and consequence assessment. The emergency response procedures and training for TSD couriers and incident commanders does not adequately address the topics of protective action recommendations and release of emergency public information. As was the case in 1998, parts of the decision-making diagrams for determining protective action recommendations cannot be implemented as written while others are not founded upon an established technical basis.

Finally, the evaluation team noted that both Federal staff and contract support for the TSD emergency management program have been reduced since the 1998 evaluation. The present level of support does not appear to be sufficient to complete needed program improvements and to maintain an emergency management system in accordance with DOE requirements, the TSD emergency plan, and TSD management expectations. TSD lacks the expertise within its own organization to complete and maintain

the hazards survey and assessment documents and has not made provisions to ensure the future and ongoing availability of such expertise.

Conclusions

TSD has made improvements in all of the areas that were identified in the 1998 complex-wide report of DOE emergency management programs as needing significant management attention; namely, hazards assessments, plans and procedures, feedback and improvement, categorization and classification, and formulation of protective actions. These improvements demonstrate TSD's commitment to be responsive to the weaknesses identified during the 1998 evaluation.

Despite the improvements, each of these program elements still has several weaknesses that preclude TSD from achieving a fully integrated and comprehensive program. Emergency plans and hazards assessments do not completely address all potential emergencies related to TSD activities. Therefore, decision-making resources for categorizing or classifying emergencies and determining protective action recommendations are also incomplete and, in some cases, can lead to incorrect decisions regarding public safety. TSD also lacks a formal mechanism for communicating the essential emergency response information stemming from these decisions to DOE Headquarters and offsite authorities in a timely and consistent manner to ensure that local responders and nearby residents can be adequately protected. Finally, the existing AL and TSD feedback, improvement, and assessment processes were not successful in addressing and correcting all of the deficiencies identified during the 1998 evaluation and have not yet required TSD emergency responders to demonstrate that they are fully capable of responding to a TSD-related incident involving hazardous materials.

FINDINGS

As directed by the Office of the Secretary of Energy, DOE has established a process for recording, tracking, addressing, and resolving findings identified by the Office of Independent Oversight as defined by the *Protocols for Responding to Office of Independent Oversight and Performance Assurance Appraisal Reports* (August 1999). The DOE Assistant Secretary for Defense Programs, as the lead program secretarial officer, and the DOE field element (AL), as the cognizant line manager, are required to develop a corrective action plan to address the findings identified in this report.

1. The AL and TSD assessment and corrective action management programs have not been sufficient to identify emergency management program and performance weaknesses and to correct previously identified deficiencies.

2. TSD has not fully analyzed the hazards associated with TSD activities to permit decision-makers to respond effectively to all potential hazardous material emergencies. TSD lacks mechanisms to accurately categorize or classify an emergency and to formulate protective actions regardless of the incident location or source of the release.

3. TSD emergency responders did not demonstrate the ability to determine and communicate protective action recommendations in a timely manner and did not demonstrate adequate understanding of their relevance to public protection.

4. TSD has not established formal processes to ensure that offsite authorities and emergency responders are promptly and accurately notified of essential emergency information in accordance with DOE Order 151.1.

The legacy issue below is from the DOE Headquarters Corrective Action Tracking System and reflects the weaknesses that were identified during the 1998 TSD emergency management evaluation. The tracking system also contains a July 1999 TSD corrective action plan to address these weaknesses. Although TSD and AL managers indicated that all of the corrective actions have been completed and independently verified, the tracking system has not yet been updated to reflect this status.

OPEN LEGACY ISSUE

AL and TSD have not implemented an effective emergency management program; significant weaknesses are evident in hazards assessments, emergency action levels, organization, training, decision flow charts for convoy commanders, program documents, management systems, and public information.

1.0 Introduction

The Office of Independent Oversight conducted a follow-up review of the emergency management program for the Albuquerque Operations Office Transportation Safeguards Division.

The U.S. Department of Energy (DOE) Office of Emergency Management Oversight, within the Office of Independent Oversight and Performance Assurance (OA), conducted a follow-up review of the emergency management program for the Albuquerque Operations Office (AL) Transportation Safeguards Division (TSD) in November 1999. The purpose of the review was to determine the status of actions taken to correct emergency management program deficiencies that were identified in May 1998 during the "Independent Oversight Evaluation of Emergency Management Programs Across the DOE Complex." This 1999 review focused on corrective actions related to weaknesses in hazards assessments; emergency action levels; protective action formulation; emergency response plans and procedures; training, drill, and exercise programs; and assessment and corrective action management programs. The evaluation also included observation of an emergency drill that resulted in a response by the Secure Communications (SECOM) center and activation of the TSD situation room in Albuquerque. Field activities associated with this drill were observed by evaluators from the OA Offices of Safeguards and Security Evaluations and Emergency Management Oversight. The results of the field evaluation are reported separately by the Office of Safeguards and Security Evaluations.

The DOE Headquarters Assistant Secretary for Defense Programs is the lead program secretarial officer for AL. The TSD is within the AL Office of National Defense Programs. The primary mission of the TSD is to provide for safe, secure movement of nuclear weapons, special nuclear materials, and non-nuclear weapon components between DOE facilities and between DOE and Department of Defense facilities in the United States. Although nearly all TSD shipments are carried over highways, TSD also maintains and operates a fleet of federally owned aircraft that can be used to transport a variety of hazardous materials. TSD contracts with Ross Aviation for these general aviation services. Two other AL offices that have critical roles in responding to a TSD emergency are the Weapons Surety Division and the Office of Public Affairs. The Emergency Response Program of the Weapons Surety Division is responsible for providing emergency notifications to DOE Headquarters through the AL Operations Center, maintaining and activating the AL Emergency Operations Center (EOC) if needed in response to a TSD event, and deploying national response assets to the site of a TSD emergency at the request of the TSD crisis manager. Personnel from the Office of Public Affairs provide support to a TSD emergency by handling all public and media inquiries, deploying with emergency response teams, and responding to the AL EOC when it is activated.

A 1998 evaluation found that strong management attention was needed to attain a comprehensive, integrated emergency management program.

The 1998 Oversight evaluation concluded that strong management attention was needed in order for the TSD to attain a comprehensive and integrated emergency management program. The evaluation identified positive attributes in the areas of equipment maintenance, SECOM operations, initial responder understanding of incident command functions and coordination with local officials, and public affairs training. However, the evaluation also found that TSD hazards assessments and emergency plans did not have a sound technical basis and that many program elements were fragmented. The review found that TSD management tended to rely upon the expertise of individuals involved in the emergency and had not embraced the basic principles and requirements promulgated by DOE for operations involving hazardous materials.

2.0 Results

The evaluation addresses emergency management elements included in DOE Order 151.1, *Comprehensive Emergency Management System*, and corrective actions identified in response to a May 1998 assessment of the TSD emergency management program. Each of the following sections includes key observations, conclusions, and a rating of Satisfactory, Marginal, or Unsatisfactory. These ratings are used to communicate the degree to which corrective actions are being effectively implemented and to provide a perspective on where line management attention is warranted. Appendix B provides a more detailed explanation of the rating system.

Feedback and Continuous Improvement Process

This follow-up review found that TSD had improved in several areas since 1998, but some important weaknesses remain.

The 1998 Office of Oversight evaluation identified a number of significant deficiencies in the TSD emergency management program. In the field report for the 1998 TSD evaluation, these deficiencies were described in seven separate weaknesses and supported by additional details. The Office of Oversight complex-wide report of emergency management programs then compiled the results from the ten separate site field reports, including TSD, into one summary report. The complex-wide report included only a synopsis of the results from each site or activity that was evaluated. In addition, each site or activity was given a rating for 13 different key elements of a comprehensive emergency management program. These ratings identified the TSD program as needing significant management attention in the areas of hazards assessments, plans and procedures, categorization and classification, formulation of protective actions, and feedback and improvement. This follow-up review determined that TSD has improved in each of these areas. However, all of these areas still exhibit some weaknesses that need to be corrected in order to achieve a fully integrated and comprehensive emergency management system.

The improvements referred to in this report are indicative of TSD's commitment to respond to concerns raised in 1998.

Subsequent to the 1998 evaluation, TSD developed corrective actions to address each of the seven weaknesses reflected in the complex-wide evaluation report. The improvements referred to in other sections of this report reflect the efforts expended to complete these corrective actions and are indicative of the TSD commitment to be responsive to the concerns raised during the 1998 evaluation. All corrective actions were reported to be complete as of September 30, 1999, and were independently verified by AL using a process that documents the nature and substance of each verification activity.

However, the corrective action closure and verification process was not effective in ensuring that all of the weaknesses were adequately addressed. This process was hampered, in part, by weaknesses in the AL assessment and corrective action management programs, which did not identify the TSD field report as the source document for the weaknesses, did not capture the complete substance of the weaknesses identified in that report, and did not assign individual responsibility for identifying and completing corrective actions. As a result, the new TSD emergency management program manager, and the AL emergency program specialist who verified that the corrective actions were complete, were not aware of the field report and the additional details about the weaknesses that the report provided. The Independent Oversight team determined that of the seven weaknesses from 1998, various elements of several of the weaknesses have not been adequately addressed. These include deficiencies in the courier emergency

response procedure, failure to formally control key response documents, weaknesses in managing the drill and exercise program and tracking deficiencies to closure, unclear roles and responsibilities, lack of a training plan, and an inappropriate Ross Aviation emergency planning zone.

In addition, the TSD and AL procedures that guide the corrective action closure process do not clearly indicate that verification activities include a determination of the effectiveness of the corrective action. TSD management indicated that all of corrective actions were complete and that AL had verified them as being complete. However, the verification process did not identify that one weakness from 1998 had not been adequately corrected, despite the fact that the weakness summary information available to cognizant TSD and AL personnel adequately described the nature of the deficiency. This weakness identified that the protective action recommendation decision diagrams used by the convoy commanders required information that was not directly measurable or observable in order to be implemented. Although these diagrams were subsequently modified as part of a corrective action, they still depend on information that is not measurable or observable and, therefore, cannot be implemented as written under all circumstances.

AL hasn't conducted any assessments of the TSD emergency management program in the past three years, as required by DOE Order 151.1.

The absence of programmatic assessments by AL and self-assessments by TSD is also impeding improvement initiatives. In the past three years, AL has not conducted any assessments of the TSD emergency management program, as required by DOE Order 151.1, and has not performed the annual assessment that is required by the TSD emergency plan. The emergency plan also requires TSD to conduct self-assessments of instructional and training material quality and overall training program effectiveness. However, no such self-assessments have been performed. The only TSD self-assessments being conducted are evaluations of drills and exercises, which have not been of sufficient scope to identify the weaknesses provided in this report.

FINDING: The AL and TSD assessment and corrective action management programs have not been sufficient to identify emergency management program and performance weaknesses and to correct previously identified deficiencies.

After the emergency response drill that was observed during this evaluation, the crisis manager conducted a post-event critique with the participants that identified several positive performance attributes as well as some items needing improvement. Improvement items that are identified as the result of drills and exercises are quickly addressed and documented in a drill/exercise report, as are the corrective actions and the date of closure. Because these corrective actions are usually fairly simple, their effectiveness is informally verified during the next drill or exercise, if not sooner. TSD does not use its formal corrective action tracking system to capture any drill or exercise deficiencies, even when the effectiveness of corrective actions for those deficiencies cannot be verified until sometime in the distant future. For example, one deficiency identified during the April 1999 joint test exercise was that the uncoordinated injection of scenario messages by the various agencies involved caused several confusing situations. The informal corrective action documented in the after-action report is to involve participating multi-jurisdictional agencies in the planning phase for future drills/exercises. However, the next joint test exercise may not occur until the year 2002. Thus, the current process does not ensure that any deficiencies that cannot be readily corrected over the near term are tracked to completion and eventually verified to have been effectively addressed. In addition, the drill/exercise summary reports and after-action reports are not distributed to all emergency response organization members so that they are aware of the results of drills and exercises that they may not have participated in and the nature and status of any corrective actions resulting from the drill and exercise evaluations.

In conclusion, the Independent Oversight team found that many elements of the TSD emergency management program have improved since the 1998 evaluation. However, the AL and TSD assessment and corrective action management programs did not ensure that all of the weaknesses identified in 1998 were adequately addressed or that the corrective actions that have been implemented were fully effective.

Furthermore, the absence of a process to systematically assess the emergency management program in accordance with DOE requirements has precluded internal identification of the various programmatic weaknesses discussed in this report.

Rating: Marginal 

Hazards Surveys and Hazards Assessments

Despite improvements, the TSD hazards assessment documents still aren't comprehensive.

The May 1998 evaluation determined that the TSD hazards assessment did not provide an adequate technical basis for emergency planning, preparedness, and response because radiological event consequences were not considered. Likewise, the Ross Aviation hazards assessment did not provide an accurate technical basis for emergency planning. Much improvement has occurred since the 1998 evaluation. TSD has updated and revised the hazards assessments and they now provide an appropriate technical basis for the primary hazardous materials transported by TSD. The TSD hazards assessment was recently reviewed by an outside organization that resulted in improvements in its technical adequacy. For example, the hazards assessment was revised to reflect that an Operational Emergency not requiring further classification is the correct declaration for a transportation incident involving hazardous material that occurs off DOE property, as is required by DOE Order 151.1. Despite these improvements, hazards assessment documents still are not comprehensive and exhibit some important weaknesses.

Although TSD and Ross Aviation did not specifically complete a hazards survey in accordance with DOE Order 151.1, most of the survey information required by the order has been included in the TSD and Ross Aviation hazards assessments. For TSD ground transportation operations, hazards were analyzed in the "Defense Programs Transportation Risk Assessment," draft 1999, developed by Sandia National Laboratories. The hazard information and relevant technical data derived from this document were then used to develop consequences of numerous accident scenarios and to compute protective action distances for a release of the primary radioactive material that is transported by TSD.

However, not all facilities and activities under TSD cognizance were adequately addressed in the hazards assessment. For example, the Transportation Safeguards Training Center Coyote Canyon Site is identified in the TSD hazards assessment as containing hazardous material, but no further consequence evaluation was performed. Similarly, TSD routinely transports special nuclear material, but these materials were not analyzed in the hazards assessment to determine the potential consequences of a release. As a result of these deficiencies, the hazards assessment does not indicate whether the hazards at the Coyote Canyon Site can affect co-located workers and the public, and the decision-making resources available to the TSD crisis manager for an emergency involving special nuclear material do not have a documented technical basis. In addition, TSD has not established a mechanism or requirement to ensure that emergency preparedness screening and analysis is performed as needed before transporting any hazardous materials that have not been previously addressed or analyzed in either the TSD or Ross Aviation hazards assessment.

TSD hazards assessments don't differentiate between an event occurring on or off DOE property.

The evaluation team noted other concerns with TSD hazards assessment. For example, the hazards assessment does not document TSD's assertion that the potential consequences of a malevolent act or a chemical event would be less severe than, and therefore are bounded by, other scenarios postulated in the hazards assessment. Additionally, the hazards assessment does not differentiate between an event occurring on or off of DOE property. Thus, no emergency action levels (EALs) have been developed that relate incident conditions to event classification (i.e., severity levels such as Alert) for events involving TSD that could occur at a DOE site or facility. Further, guidance for emergency managers and responders in handling such events has not been established.

Weaknesses associated with the Ross Aviation hazards assessment were also identified. For transportation of hazardous materials by air, only the consequences of an aircraft crash were analyzed. Although the hazards assessment characterizes a malevolent act on a loaded aircraft on the ground as a

high-consequence event, no assessment of this scenario was performed to screen the event or analyze its consequences. The hazards assessment then provides a threshold for declaring an Operational Emergency not requiring further classification for a loaded aircraft coming under hostile attack, even though this scenario was not analyzed. In another example, the hazards assessment indicates that an Alert emergency declaration may be appropriate for an incident involving Ross facilities at Kirtland Air Force Base. This is inconsistent with and not supported by other parts of the document that state that all hazardous materials have been screened and are below threshold planning quantities. This threshold is not reflected in the Ross Aviation emergency plan categorization tables. The hazards assessment also incorrectly concludes that the emergency planning zone for an air shipment event is 200 meters from the crash site. The results of the consequence analyses that were used to establish predetermined protective action recommendations indicate that the applicable protective action guide can be exceeded to a distance of approximately two kilometers. The potential radiation dose at this distance and its implications for evacuation should have been considered in determining the size of the emergency planning zone. This last deficiency was also identified during the 1998 emergency management review of TSD.

FINDING: TSD has not fully analyzed the hazards associated with TSD activities to permit decision-makers to respond effectively to all potential hazardous material emergencies. TSD lacks mechanisms to accurately categorize or classify an emergency and formulate protective actions regardless of the incident location or source of the release.

An individual in the AL Weapons Surety Division performed much of the work to establish a technical basis for the hazards assessments. The Independent Oversight team noted that TSD does not currently have the staff or expertise within its own organization to upgrade the hazards assessments or to continuously maintain the hazard evaluation and assessment process needed to support an effective emergency management system. Some of the weaknesses identified in this section are the result of these shortfalls.

In summary, hazards assessments have been completed for primary radiological hazards associated with TSD operations, and progress has been made in correlating consequence assessment results to objective decision-making resources, such as emergency categorization thresholds and protective action recommendations. However, not all hazardous materials were considered or correctly assessed, and not all accident scenarios and potential locations were analyzed. Thus, the analysis results do not always provide a sound foundation upon which other elements of the emergency management system can be structured. Additionally, TSD has not established adequate processes or ensured that sufficient staff will be available to sustain the hazards assessments as accurate, living documents that reflect current operational hazards.

Rating: Marginal 

Emergency Plans and Procedures

The 1998 evaluation identified several deficiencies related to emergency plans and procedures. These included poor definition of responsibilities for emergency categorization and classification; EALs that could not be implemented and were not used by responders; and outdated, incomplete, and uncontrolled emergency management program documents. Several changes have been implemented that have improved the readiness and response posture of the TSD and Ross Aviation organizations. However, weaknesses in several of these areas remain.

TSD and Ross Aviation have updated their emergency plans, but they are not well integrated and not completely consistent with hazards assessments.

Both the TSD and Ross Aviation emergency plans have been recently updated. The thresholds for categorizing and classifying a TSD ground or air transportation incident are included in these emergency plans. Despite these updates, the emergency plans are not well integrated with and, in some cases, are inconsistent with the hazards assessments. For example, the Ross Aviation emergency plan includes EALs for Alert, Site Area, and General Emergencies associated with Ross activities that are not supported by the hazards assessment. The emergency plans also do not adequately address some important potential emergency conditions related to TSD activities as described below.

For any off-normal situation involving TSD shipments, the Convoy Commander-in-Charge (CCIC) assesses the scene and initiates event response with his team of special agents dependent on conditions. Scene conditions are relayed to SECOM, which is manned 24 hours a day. SECOM in turn relays event information to the TSD Director or duty officer, who is on call 24 hours a day and who becomes the crisis manager if an emergency is declared. However, the emergency plans do not clearly and unambiguously identify the roles and responsibilities of responders and do not completely describe the concept of operations for responding to a TSD emergency. For example, the plans do not provide expectations for categorizing or classifying an emergency in a timely manner and do not identify that such events should be categorized or classified by the duty officer before arriving at the situation room when an emergency occurs outside of normal working hours. Also, the emergency plans do not clearly identify who is responsible for formulating protective action recommendations for a TSD incident or for providing routine and consistent updates of essential emergency information to offsite authorities.

TSD has developed excellent reference resources and decision-making response tools.

TSD personnel have developed excellent reference resources and decision-making response tools that are readily available for SECOM operators and responders to the situation room. The position-specific notebooks are well-maintained and contain the essential information for each individual position based upon their responsibilities in an emergency. The TSD Duty Officer Program Notebook is also well-constructed, provides the duty officer with critical response information in a single document, and contains information needed to categorize and classify an emergency before arriving at SECOM or the situation room. During the emergency drill that was observed during this evaluation, SECOM and situation room personnel effectively employed the electronic and paper checklists to perform their duties. However, there are also some weaknesses associated with these documents. For example, the emergency declaration thresholds for air shipments are not available in the situation room or the Duty Officer Program Notebook. In addition, the protective action recommendations for air shipments that are provided in the Duty Officer Program Notebook were incorrectly transcribed from the hazards assessment. These recommendations are also not available in the situation room to permit the crisis manager to perform his role as the emergency manager as defined in the Ross Aviation emergency plan. The threshold tables for ground transportation events contain several repetitive thresholds and several groups of thresholds that should be combined to eliminate the potential for error and to promote timely decision-making.

TSD has also developed logic diagrams that are used to decide which of three predetermined protective action recommendations should be provided to local responders based upon condition at the incident scene. These protective action recommendations were appropriately derived from the results of the hazards assessment and are available to the incident commander on colored cards (red, yellow, and green) to facilitate accurate and consistent communications with local responders. Although these cards are an excellent communication mechanism, the wording is inconsistent with DOE's role of recommending protective actions to offsite authorities. In addition, as was identified during the 1998 evaluation, part of the logic diagrams cannot be implemented as written. The existing logic diagrams require an assessment of cargo integrity. However, if the transportation vehicle is not breached such that the cargo can be visually observed, there are no mechanisms to determine its integrity and default protective actions for such conditions have not been specified. As was discussed previously, the logic diagrams for determining protective action recommendations for an event involving special nuclear material are not founded upon a documented technical basis. The logic diagrams and other resource documents also do not provide any guidance for handling a hazardous material incident that may involve a TSD vehicle but does not affect its cargo. The existing logic diagrams would result in a protective action recommendation decision of "none" even if a hazardous material were being released due to an accident involving or caused by TSD or if TSD personnel were being impacted by such a release. In addition, the protective action logic diagrams and categorization tables available in the situation room are not formally controlled documents. This weakness was also identified during the 1998 evaluation.

The TSD emergency plan unilaterally assumes that if a transportation event occurred at a DOE site or facility, the host site or facility would be responsible for all emergency response decision-making except for command of tactical operations. TSD has not established an interface or adequately coordinated with

DOE sites that routinely host TSD operations to ensure that the emergency response organizations at these sites are prepared to accept this role and responsibility, and have implemented appropriate response elements, such as EALs and protective action formulation protocols, to respond to a TSD-related event at their site. In addition, TSD has not established thresholds or EALs within its own program or provided guidance to convoy commanders and crisis managers to relate incident conditions to event classification (i.e., severity levels such as Alert) for TSD-related events on a DOE site, or to aid them in determining appropriate protective actions for recommendation to the emergency manager at the affected site. The TSD emergency plan and computer-based training materials also incorrectly state that all TSD transportation emergency events are classified as Operational Emergencies not requiring further classification, without regard to the location where they occur (on or off of a DOE site).

Weaknesses were identified in the emergency response implementing procedure for the TSD couriers.

Additional weaknesses were identified in the emergency response implementing procedure for the TSD couriers. The procedure does not include steps directing several critical emergency management response activities, such as instructions to issue the protective action recommendation cards to the local initial responder incident commander and advise SECOM of the recommendations, instructions to "assess" the incident scene in a manner such that the duty officer can readily and immediately translate event conditions into an emergency categorization or classification, and direction as to when it is permissible to release the media statement that is attached to the procedure. A revised procedure has been in draft for approximately one year, but has not yet been issued.

During the emergency response drill, the evaluation team noted several positive performance attributes. These included the effective communications that were maintained between the convoy commander and other response elements and were carried out in a quickly paced but accurate manner; prompt assessment of the incident scene and availability of this information to the crisis manager; and correct and timely categorization of the simulated conditions as an Operational Emergency not requiring further classification in accordance with established thresholds. However, several weaknesses were also identified relative to the formulation of protective actions and processes for notifying offsite authorities and emergency responders of essential emergency information:

- A determination of protective action recommendations was not made in a timely manner following the declaration of an Operational Emergency.
- A protective action recommendation did not accompany the initial notification of offsite authorities.
- A protective action recommendation did not accompany the notification of the Albuquerque Operation Center for subsequent transmittal to DOE Headquarters.
- The SECOM manager, SECOM communicator, and the CCIC did not understand the crisis manager's order to "implement the red card protective actions."
- TSD lacks a standard and consistent mechanism for communicating and recording emergency response information among the CCIC, the SECOM manager, the SECOM operator, the crisis manager, and the AL EOC.

FINDING: TSD emergency responders did not demonstrate the ability to determine and communicate protective action recommendations in a timely manner and did not demonstrate adequate understanding of their relevance to public protection.

With regard to emergency notifications, TSD has not established adequate mechanisms for providing prompt initial emergency notifications to DOE Headquarters and offsite authorities. Although SECOM will immediately notify an offsite entity if additional support is needed for a TSD incident, this action does not fulfill the requirements for offsite notifications of appropriate Federal, state, tribal, and local organizations in accordance with DOE Order 151.1. Current TSD expectations are that the AL will perform the formal DOE Headquarters and offsite notifications on their behalf. During the observed drill, which occurred during normal working hours, SECOM personnel did not begin transmitting information to an AL EOC communicator until more than 15 minutes after the event had been classified as an Operational

Emergency involving a potential hazardous material release. The information provided by SECOM did not include critical information, such as what outside assistance had already been requested by DOE, and recommended protective actions as is required by the TSD Duty Officer Program Notebook. Also, the AL EOC communicator did not request this information. AL is not prepared to perform the 15-minute notification requirement to offsite authorities for an incident involving hazardous materials until their EOC is activated, which could take up to an hour outside of normal working hours. The situation is similar for events involving Ross Aviation. Although the aircraft commander is required to notify the Federal Aviation Administration of incidents involving air shipments of hazardous materials, a similar mechanism has not been established to ensure prompt notification of other DOE elements and applicable Federal, state, tribal, and local organizations.

FINDING: TSD has not established formal processes to ensure that offsite authorities and emergency responders are promptly and accurately notified of essential emergency information in accordance with DOE Order 151.1.

In summary, TSD has improved its emergency plans, procedures, and decision-making response tools. However, emergency management roles and responsibilities are not clearly defined for all TSD response organization members and have not been adequately coordinated among all potential response elements, including those at DOE sites and in the AL EOC. Implementing procedures for incident commanders do not adequately reflect expectations for assessing a hazardous material incident scene and communicating protective action recommendations. Initial protective action recommendation logic diagrams provide for effective default decision-making, but cannot always be implemented as written for the incidents to which they apply, have not been established for all potential TSD emergencies, and are not always based upon a documented technical foundation. In addition, TSD has not established mechanisms to ensure the prompt initial notification of emergency response personnel and organizations, including appropriate DOE and other Federal, state, tribal, and local organizations in accordance with DOE Order 151.1.

Rating: Plans and Procedures – Marginal
Notifications and Formulation of Protective Actions – Unsatisfactory

Training, Drill, and Exercise Program

The 1998 Office of Oversight evaluation identified various programmatic weaknesses in the training, drills, and exercises conducted in support of the TSD emergency management program. There was no evidence of formal training in key areas such as emergency categorization and classification, and the lack of an established emergency management training plan and associated records management process precluded determining the overall status of training for emergency responders. In addition, the drill and exercise program did not ensure that all associated emergency response requirements were being met and that corrective actions from drills and exercises were being adequately addressed and tracked to closure. This follow-up review found that since a new emergency management program manager was assigned in November 1998, there have been improvements in the quality of training provided to TSD emergency responders, in the records used to document that training, and in the handling of corrective actions from drills. Some training and drill program weaknesses remain, including the continued absence of a formal, comprehensive emergency management training plan.

The computer-based training courses are a significant improvement over the self-directed training activities they replaced.

Training is conducted using a combination of classroom and computer-based training (CBT) courses. Three CBT modules were developed recently to address the incident command system, TSD situation room duties, and emergency categorization and classification. The computer-based situation room duties and emergency categorization and classification courses are a significant improvement over the self-directed training activities (i.e., required reading package and associated test) that they replaced. The situation room CBT course, which is intended to familiarize personnel with the purpose of the situation room and the specific duties of each situation room position, is well-conceived and constructed. The categorization and classification course stresses timely categorization and classification using an appropriate list of notification information items, such as protective actions, and includes a testing module that provides immediate feedback to the student regarding performance on each test question.

While the CBT courses are objective-based, the objectives for two of the three CBT courses do not appear to be founded upon an accurate and current assessment of the responders' training needs and the courses have not yet been validated with responders. Consequently, there are some content weaknesses, and some topical areas are of questionable utility to the students. For example, the incident command structure CBT course is apparently designed for such a wide audience that it is of limited value to any specific emergency responder. The section that addresses incident commander roles and responsibilities contains no reference to determining and communicating protective action recommendations, contains several unexplained references to incident commander liability, and includes a discussion on the roles and responsibilities of the finance section chief, although the discussion mentions that this position is not normally activated as part of the incident command structure. Furthermore, the training does not identify under what circumstances the incident command structure described in the training is to be established or how and when to transition from the command structure that is typically used in the field in the initial stages of a TSD event to an incident command system for hazardous materials response.

The training program does not adequately address implementation of the TSD protective action recommendation system.

Several other training program weaknesses were noted. For example, one of the Secretary of Energy directives issued in 1997 required all emergency managers to be trained in conservative decision-making. However, there are no such training requirements for TSD convoy commanders or crisis managers, and half of the alternate crisis managers have not had any training specifically devoted to the topic of conservative decision-making. In addition, the topic of protective action recommendations, and the specific implementation process used at TSD, is not adequately addressed in either the new CBT courses or in an existing classroom training course, and has not been identified as a necessary training topic for all appropriate responders. Independent Oversight team observations of the emergency response drill confirmed that some key responders lack an adequate understanding of protective action recommendations to ensure that the recommendations are promptly conveyed and accurately interpreted by local responders.

A review of several drill and exercise packages indicated that they are well-documented, including deficiencies identified and the actions taken to correct them.

The TSD drill and exercise program contains a number of positive elements. A review of several drill and exercise packages indicated that they are well-documented, each having a summary report that includes drill or exercise deficiencies and actions taken to correct them. There is also clear evidence that the drill and exercise program has resulted in improvements in areas such as responder checklists and use of communications equipment by situation room personnel. However, weaknesses in the process for evaluating drills and exercises limit their utility as a feedback mechanism. Although evaluators use a standard checklist based on the major emergency response program elements to evaluate the performance of situation room staff during drills and exercises, there are no specific criteria within the major categories for verifying an acceptable (minimal) level of performance. Checklists for evaluating the performance of the incident commander and other responders in the field are fairly comprehensive, but do not include CCIC determination of protective action recommendations and transmittal to local authorities as evaluation criteria.

The effectiveness of the training, drill, and exercise programs is also limited by the lack of a comprehensive emergency management training plan, which is required by the TSD emergency plan. TSD has not formally documented the training, drill, and exercise requirements for each member of the emergency response organization to ensure that they are capable of fulfilling their assigned duties and responsibilities. Another limitation is the nature and utility of the training records tracking system. Training requirements and attendance records for the TSD couriers are documented in a computer database that effectively facilitates tracking of responder training status. On the other hand, a manual process, which was instituted in response to the 1998 evaluation, is being used to track the participation of situation room responders in training, drills, and exercises. A detailed review of this system identified that responder participation is being accurately recorded, but that the process is cumbersome. As a result, TSD managers do not have ready access to the information necessary to plan responder participation in future drills and to ensure that all emergency response organizations' members maintain their proficiency.

In conclusion, TSD has implemented several improvements in the training, drill, and exercise programs. However, weaknesses exist in the training content provided to some responders and the thoroughness of the drill and exercise evaluation process. The absence of a formal, comprehensive emergency management training plan remains a weakness from the 1998 Oversight evaluation. Consequently, the training, drill, and exercise programs are not yet sufficiently rigorous to ensure that TSD emergency response personnel, including situation room staff, SECOM staff, and CCICs, are adequately prepared for their roles and responsibilities related to emergency response.

Rating: Marginal 

3.0 Conclusions and Overall Rating

This section presents an overall perspective and rating on the current state of the TSD emergency management program.

AL and TSD staff are committed to and have worked hard to improve the TSD emergency management program since the 1998 evaluation. The programmatic changes that have been made in the past year are appropriate and have resulted in improvements in each of the five areas identified in 1998 as needing significant management attention; i.e., hazards assessments, plans and procedures, feedback and improvement, categorization and classification, and formulation of protective actions. However, not all of the deficiencies identified in the 1998 report have been addressed and corrected due to breakdowns in the AL and TSD feedback and improvement processes. Furthermore, the revised program documents still do not address all of the hazards associated with TSD air and ground transportation operations. In addition, some of the key decision-making resources are not technically based and do not provide guidance for all potential TSD-related emergencies.

The overall rating of Marginal and the individual element ratings reflect an emergency management program that has improved in many areas since 1998 but does not yet constitute a fully integrated and comprehensive program. The Unsatisfactory rating reflects deficiencies in the emergency notification process that were identified during this evaluation and their impact on TSD's ability to notify offsite agencies of protective action recommendations in a timely manner. TSD has not yet demonstrated that all of the critical response elements, including offsite notifications, transmittal of protective action recommendations, and ongoing event consequence assessment, can be effectively implemented for potential emergencies involving a hazardous material release and are consistent with DOE Order 151.1 requirements.

Overall Rating: Marginal

Ratings by Report Element	
Feedback and Continuous Improvement Process	Marginal
Hazards Surveys and Hazards Assessments	Marginal
Emergency Plans and Procedures	Marginal
Notifications and Formulation of Protective Actions	Unsatisfactory
Training, Drill, and Exercise Program	Marginal

4.0 Opportunities for Improvement

The follow-up review conducted by the Independent Oversight team identified several opportunities for improvement. These potential enhancements are not intended to be prescriptive. Rather, they are intended to be reviewed and evaluated by the responsible DOE and contractor line managers and prioritized and modified as appropriate, in accordance with site-specific programmatic and emergency management objectives.

- Establish a mechanism to ensure that the results of internal and external audits, assessments, and evaluations are fully and accurately captured and tracked to ensure that identified deficiencies are adequately addressed and corrected. Assign responsibility for each corrective action to a specific individual and hold them accountable for completing assigned actions.

- Revise TSD ground and air transportation hazards assessments to incorporate accurate hazards screening for all activities and to ensure that hazards assessments provide required planning, preparedness, and response basis for all potential emergencies and hazards. Reassess emergency planning zones established for air transportation emergencies to assure consistency with applicable protective action guidelines.

- Revise TSD and Ross Aviation plans and procedures to clearly specify the roles, responsibilities, and authorities of emergency management decision-makers in the field and in emergency response facilities.

- Evaluate the need for additional resources and expertise to complete the hazards assessments and implementing documents and to ensure that adequate resources are available to maintain the TSD emergency management program over the long-term.

- Develop procedures and/or resources for categorizing and classifying TSD transportation emergencies involving hazardous materials for all event locations. Establish mechanisms with host sites that define and implement roles and responsibilities for emergency decision-making. Verify and validate that procedures provide objective, observable, and unambiguous categorization thresholds and classification EALs that are specific to transportation operations. Provide training for personnel responsible for categorization and classification to ensure consistency in understanding and decision-making.

- Revise protective action decision diagrams to ensure that they can be implemented under all accident conditions, including accident circumstances involving a hazardous material release wherein the source of the release is not TSD. Ensure that the technical basis of all decision diagrams has been documented and is accurate.

- Revise CCIC event response procedures to include steps related to emergency response activities such as formulation of protective action recommendations. Validate procedures to ensure that they accurately reflect expectations for performing emergency response actions in the field and are structured in a manner that facilitates easy implementation in a high-stress, time-urgent environment.

- Develop and implement initial notification mechanisms and procedures for both air and ground transportation emergencies that permit prompt notification of applicable organizations following event categorization or classification under all circumstances, including outside normal working hours. Ensure that pertinent notification information is accurately collected at the scene and in emergency response facilities and is included in notifications to DOE Headquarters and offsite agencies.

- Provide incident commanders, situation room staff, and SECOM personnel with training on

the purpose, terminology, and communication of protective actions to ensure prompt and accurate dissemination of protective action recommendations during the critical, early stages of event response.

- Update existing training needs assessments for all TSD emergency response positions and verify that the content of emergency response classroom and CBT courses is consistent with response organization member needs.

- Provide training on conservative decision-making for all incident commanders and crisis managers in areas such as how to categorize events when EALs are not directly applicable and the associated actions that should be taken by emergency management decision-makers.

- Formalize the emergency management program training plan to include all training and drill/exercise participation requirements for situation room and SECOM personnel and a master scheduling process for drills and exercises to ensure that over a period of time, all of the response plans, TSD responders, and state/local responders are involved in a test of their response capabilities.

- Revise the existing CBT records tracking system to include all situation room and SECOM personnel so that emergency services personnel can readily track the participation of emergency response personnel in all training and responder-proficiency activities.

- Ensure that testing modules for CBT courses provide immediate feedback to the student regarding wrong answers and provide reading references for all incorrectly answered questions to facilitate student preparation for retaking the test.

- Develop and implement an emergency management assessment strategy beyond the drill and exercise program that prioritizes areas for review, incorporates specific evaluation criteria, and uses independent assessors who are subject matter experts.

- Consider consolidating the drill and exercise summary reports with the associated after-action reports to provide one uniform mechanism for identifying and communicating lessons learned from drills and exercises. To maximize the value of these reports, minimize the amount of information that is repeated in each report and distribute these reports to all affected TSD emergency response personnel.

- Develop and clearly communicate expectations for systematically capturing, analyzing, resolving, and tracking deficiencies identified during drills and exercises. Expand or revise checklists, as necessary, to ensure that all emergency management elements are periodically assessed with specific evaluation criteria.

- Use available DOE resources with expertise in emergency management to help develop an integrated emergency management program that includes all TSD transportation activities.

APPENDIX A
FINDINGS FOR CORRECTIVE ACTION AND FOLLOW-UP

This appendix summarizes the significant findings identified during the Office of Independent Oversight and Performance Assurance follow-up review of the Albuquerque Operations Office Transportation Safeguards Division emergency management program. The findings identified in this appendix will be formally tracked in accordance with the *Protocols for Responding to Office of Independent Oversight and Performance Assurance Appraisal Reports* (August 1999) and will require a formal corrective action plan. The DOE Office of Defense Programs and the Albuquerque Operations Office need to specifically address these findings in the corrective action plan. Line management should address other weaknesses and/or deficiencies identified in this report, but they need not be included in the formal corrective action plan.

FINDING STATEMENT	REFER TO PAGES:
1. The AL and TSD assessment and corrective action management programs have not been sufficient to identify emergency management program weaknesses and to correct previously identified deficiencies.	6-7
2. TSD has not fully analyzed the hazards associated with TSD activities to permit decision-makers to respond effectively to all potential hazardous material emergencies. TSD lacks mechanisms to accurately categorize or classify an emergency and formulate protective actions regardless of the incident location or source of the release.	8-9
3. TSD emergency responders did not demonstrate the ability to determine and communicate protective action recommendations in a timely manner and did not demonstrate adequate understanding of their relevance to public protection.	11
4. TSD has not established formal processes to ensure that offsite authorities and emergency responders are promptly and accurately notified of essential emergency information in accordance with DOE Order 151.1.	11-12

OPEN LEGACY ISSUE

AL and TSD have not implemented an effective emergency management program; significant weaknesses are evident in hazards assessments, emergency action levels, organization, training, decision flow charts for convoy commanders, program documents, management systems, and public information.

APPENDIX B
EVALUATION PROCESS AND TEAM COMPOSITION

The evaluation was conducted under the direction of the Secretary of Energy's Office of Independent Oversight and Performance Assurance. The evaluation was performed according to formal protocols and procedures, including an Appraisal Process Guide, which provides the general procedures used by Independent Oversight to conduct inspections and reviews, and the evaluation plan that was developed specifically for this activity, which outlines the scope and conduct of the process. Planning discussions were conducted to ensure that all team members were informed of the review objectives, procedures, and methods.

Explanation of Rating System

The Office of Independent Oversight and Performance Assurance assigns an overall rating to the emergency management program; ratings are also assigned to selected elements of the program. The rating process involves the critical consideration of all evaluation results, particularly identified strengths and weaknesses. In the case of weaknesses, the importance and impact of those conditions is analyzed both individually and collectively, and balanced against any strengths and mitigating factors to determine their impact on the overall goal of protection of site workers and the public. The Office of Independent Oversight and Performance Assurance uses three rating categories—Satisfactory, Marginal, and Unsatisfactory—that are also depicted by colors as green, yellow, and red, respectively.

Satisfactory (Green): An overall rating of ***Satisfactory*** is assigned when the emergency management program being evaluated provides reasonable assurance that all of the site's emergency responders are ready to respond promptly and effectively to an emergency event or condition.

An emergency management element being evaluated would normally be rated Satisfactory if the emergency management function is effectively implemented. An element would also normally be rated as Satisfactory if, for any applicable standards that are not met, other compensatory factors exist that provide equivalent protection to workers and the public, or the impact is minimal and does not significantly degrade the response.

Marginal (Yellow): An overall rating of ***Marginal*** is assigned when the emergency management program being evaluated provides questionable assurance that site workers and the public can be protected following an emergency event or condition.

An emergency management element being evaluated would normally be rated Marginal if one or more applicable standards are not met and are only partially compensated for by other measures, and the resulting deficiencies in the emergency management function degrade the ability of the emergency responders to protect site workers and the public.

Unsatisfactory (Red): An overall rating of ***Unsatisfactory*** is assigned when the emergency management program being evaluated does not provide adequate assurance that site workers and the public can be protected following an emergency event or condition.

An emergency management element being evaluated would normally be rated Unsatisfactory if one or more applicable standards are not met, there are no compensating factors, and the resulting deficiencies in the emergency management function seriously degrade the ability of the emergency responders to protect site workers and the public.

Team Composition

Director, Independent Oversight and Performance Assurance

Glenn Podonsky

Deputy Director, Independent Oversight and Performance Assurance

Mike Kilpatrick

Director, Office of Emergency Management Oversight

Charles Lewis

Team Leader

Kathy McCarty

Team Members

David Schultz
Steve Simonson

Quality Review Board

Mike Kilpatrick
Dean Hickman
Tom Davis
Charles Lewis